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EXAMINER

BLOOM, NATHAN J

ART UNIT	PAPER NUMBER
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2609

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/713,477

Applicant(s)

YAGISHITA ET AL.

Examiner

Nathan Bloom

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Instant claim 8 provides the additional limitation to the apparatus of claim 2 that the image compressed code is obtained by encoding the master image data formed by dynamic image data in frame units. The picture quality-judging unit uses the number of frames in the master image and the compressed image, which are acquired from the compressed code as the code information to use for judging the quality of the compressed image relative to the master image. In the Motion JPEG2000 standard each frame is treated as a still image and is compressed accordingly. Since each frame is treated and not dropped then the number of frames in the compressed image data is the same as the number of frames in the master image data. Therefore there is no indication of quality based on the number of frames in the master and compressed image data. However, it is known in the art that the decoder can display reduced frame rate versions of the compressed file, but this is not or stated in the disclosure that the compressed image's frame rate is down sampled.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 11, 13-14, 16, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamada (US 7076103 B2).

Instant claim 1 encompasses an image processing apparatus comprising an image expansion unit, image display unit, picture quality judging unit, and an image information display unit. The image expansion unit expands (decompresses) the compressed image code that is obtained by compressing the master image data. The image display unit displays the expanded image data, and the image information display unit displays the picture quality on the display unit. The picture quality-judging unit judges the quality of the compressed image data with respect to the picture quality of the master image data.

Yamada in paragraphs 0041, 0042, 0044, and 0047-0048 discloses an apparatus for compressing an image (0041) and then decompressing (0042) and as can be seen in Fig. 4 displaying this image and the compression information of the compressed image (0044).

This compression information is described in paragraph 0046 as containing compression mode, compression ratio, and level of image quality relative to the decompressed image.

The level of image quality shows the level of quality of the compressed image with

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respect to that of original image (or previously compressed image) data since it is based on the compression ratio used to obtain the compressed image data. The compression information is placed in a tag that is attached to the compression data (0047,0048) after the image has been compressed. Also, paragraph 0054 covers the case when the compression information has not been added to the image data and in this case the information is pulled from memory.

Instant claim 2 places the additional limitations to the picture quality-judging unit of claim 1. The picture quality-judging unit is comprised of a master code information-acquiring unit that acquires master image data from the compressed image code, a code information-acquiring unit that acquires code information from the compressed image code, and a picture quality information output unit to output the picture quality information comparison result. Yamada has disclosed the system of claim 1, the further limitations of claim 2 are disclosed by Yamada in paragraphs 0042, 0044, 0047, 0048, and 0054. The acquiring units are referred to in Yamada are not clearly stated but have been implied because it is necessary to acquire the quality information from the tags provided in the compressed image data in order to access, change, and display the information as is done in Yamada. The picture quality information output is also an implied device since has been disclosed by Yamada in Fig. 4 and paragraph 0044 that the quality information is displayed. The judging of the relative quality of the picture quality information output unit is done as the image is compressed and attached as a tag as is described in paragraphs 0044, 0047, and 0048. The acquiring units and picture quality information units are inherent and must exist in the disclosed invention to acquire the

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information, perform the relative quality judgment, and then to display the quality information.

Instant claim 3 further limits the image processing apparatus of claim 2. The picture quality-judging unit acquires the number of code bits (file size) of the master image and of the compressed image as the two sets of code information used for quality comparison. In paragraph 0046 Yamada discloses the compression information and what it consists of: the compression ration and the level of image quality. This level of image quality refers directly to a corresponding compression ratio such as 1/10, 1/20, 1/40 and so on. Furthermore it is disclosed by Yamada that both the quality information and the rest of the compression information are to be displayed thus giving several indications of image quality. The compression ratio is in fact calculated from the number of code bits of the compressed image as compared to the master image and thus this displayed compression ratio is the same quality information as is being displayed by the apparatus of claim 3.

Instant claim 11 encompasses the method as is performed by the method of claim 1. It has been shown that Yamada has disclosed the system of claim 1. Furthermore, Yamada has disclosed this method in paragraphs 0017-0020.

Instant claim 13 encompasses the apparatus as is claimed in instant claim 1, and has been previously disclosed by Yamada as per the argument of instant claim 1.

Instant claim 14 encompasses the image expansion unit and picture quality judging unit as described in instant claim 1, and has been previously disclosed by Yamada as per the argument of instant claim 1. Furthermore instant claim 15 further

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limits the claim with limitations encompassed by instant claim 2 and 3, and has been shown to be disclosed by Yamada as per the arguments of instant claims 2 and 3.

Instant claim 16 encompasses the computer-readable storage medium that stores a program, which upon execution by a computer causes the computer to process the image data. The computer program is comprised of an image expansion procedure that performs the same operation as the image expansion unit described in instant claim 1, and a picture quality-judging procedure that performs the same operation as the picture quality-judging unit in instant claim 1. These are described as part of a program store in a computer readable medium in claims 15-19 on page 5 of Yamada.

Instant claim 18 is encompassed by the limitation of instant claim 11 and as per rejection of instant claim 11 has been disclosed by Yamada.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9-10, 12, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada.

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Instant claim 9 encompasses the computer readable storage medium that store a program that when executed by a computer causes the computer to perform the process as is accomplished by the system of claim 1. It has been shown that Yamada discloses the system of claim 1 and furthermore claims the computer readable storage medium that accomplish some of these limitations in claims 15-19 contained on page 5 of Yamada. Also, Yamada discloses in paragraph 0030 "The image data compression method, the image data decompression method, and the image display method may be provided as a program to cause a computer to execute the methods." However, this does not disclose all the limitations of claim 9, but in combination with the fact that Yamada has disclosed the apparatus of claim 1 which performs the process as described by instant claim 9. Based on this it would have been obvious to one of ordinary skill in the art to implement the apparatus as described by Yamada in software for use in a computer system.

Instant claim 10 further limits claim 9 and encompasses the computer readable storage medium that store a program that when executed by a computer causes the computer to perform the process as is accomplished by the system of claim 2. It has been shown that Yamada discloses the system of claim 2 and furthermore claims the computer readable storage medium that accomplishes some of these limitations in claims 15-17 contained on page 5. . Also, Yamada discloses in paragraph 0030 "The image data compression method, the image data decompression method, and the image display method may be provided as a program to cause a computer to execute the methods." However, this does not disclose all the limitations of claim 9, but in combination with the fact that Yamada has disclosed the apparatus of claim 2 which performs the process as described by instant claim 9. Based on this it would have been obvious to one of

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ordinary skill in the art to implement the apparatus as described by Yamada in software for use in a computer system.

Instant claim 12 encompasses the method as is performed by the method of claim 2. It has been shown that Yamada has disclosed the system of claim 2. Furthermore, Yamada has disclosed portions of this method in paragraphs 0017-0020. Given that the apparatus has shown have been disclosed by Yamada then the method would have been obvious to one of ordinary skill in the art to since the apparatus performs the method as described in claim 12.

Instant claim 17 encompassed the program stored on the computer readable medium that when executed performs the same operation of the apparatus of instant claim 15. As per the rejection of instant claim 1-3, and 14-15 Yamada has disclosed the apparatus described within these claims. Furthermore, based on the fact that the apparatus has been disclosed it would have been obvious to implement this apparatus in software so as perform the operation as accomplished by the apparatus on a computer system.

Instant claim 19 is encompassed by the limitations of instant claim 12 and as per rejection of instant claim 12 has been disclosed by Yamada.

5. Claims 1-2, and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada in further view of Skodras, et al and ISO/IEC 15444-1 and 15444-3 (Motion JPEG).

Instant claim 5 provides the additional limitation to the apparatus of claim 2 that the image compressed code is obtained by encoding multiple resolution conversion

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coefficients of the master image data in units of resolutions. The picture quality-judging unit uses a resolution of the master image and the compressed image, which are acquired from the compressed code as the code information to use for judging the quality of the compressed image relative to the master image. As is described in the argument of claim 3, Yamada discloses an apparatus that judges the quality based on the file sizes of the master and compressed image (compression ratio) and then displays quality information based on this judgment. However, Yamada does not teach the use of the resolutions of the master and compressed images to judge the relative quality of the compressed image and does not teach the method of encoding the compressed image. Skodras discloses in an overview of the JPEG2000 compression standard on page 1119 in section IV.6 titled "New File Format With IPR Capabilities" that the resolution information of both the master and compressed image are in the header file (tag) of the image compressed data. Furthermore, Skodras discloses the use of JPEG2000 as a compression algorithm, and this compression algorithm encodes the image data by encoding multiple resolution conversion coefficients. It would have been obvious to one of ordinary skill in the art to use the JPEG2000 method of compressing the image code since it provides better compression ratios with a reduced cost to the loss of quality associated with compression. Also, since it is known that the resolution information is available and that resolution is a measure of the quality of the image then it would have been obvious to one of ordinary skill in the art to combine the teaching of Yamada and Skodras to provide another measure of image quality for comparison.

Instant claim 4 provides the additional limitation to the apparatus of claim 2 that the image compressed code is obtained by encoding frequency conversion coefficients of

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the mater image data in units of resolutions. The picture quality-judging unit uses the number of bit planes of the master image and the compressed image, which are acquired from the compressed code as the code information to use for judging the quality of the compressed image relative to the master image. As is described in the argument of claim 3, Yamada discloses an apparatus that judges the quality based on the file sizes of the master and compressed image (compression ratio) and then displays quality information based on this judgment. However, Yamada does not teach the use the number of bit planes of the master and compressed images to judge the relative quality of the compressed image and does not teach the method of encoding the compressed image. The method of encoding is known as JPEG2000 and was known to one of ordinary skill in the art and thus would've been obvious to combine with the teachings of Yamada and Skodras to provide a method of image quality comparison for JPEG2000 images. However, neither teach the use of bit planes to compare image quality, but in ISI/IEC 15444-1 in Annex A the number of bit planes of the original image is shown to be stored in the header file as well as the number of bit planes in the compressed image. Therefore since these compressed images carry this quality information then it would have been obvious to one of ordinary skill in the art to use these quality indicators to provide another measure of image quality. It should be noted that the bit depth of the JPEG2000 compressed image is not the same across all pixels and thus a nominal bit depth would have to be calculated to be used as an overall image quality indicator.

Instant claim 6 provides the additional limitation to the apparatus of claim 2 that the image compressed code is obtained by dividing the master image data into tiles and encoding the mater image data in units of these tiles. The picture quality-judging unit

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uses the resolutions in the master image and the compressed image, which are acquired from the compressed code as the code information to use for judging the quality of the compressed image relative to the master image. As is described in the argument of claim 3, Yamada discloses an apparatus that judges the quality based on the file sizes of the master and compressed image (compression ratio) and then displays quality information based on this judgment. However, Yamada does not teach the use of the resolutions of the master and compressed images to judge the relative quality of the compressed image and does not teach the method of encoding the compressed image. It is known to one of ordinary skill in the art that JPEG2000 breaks the image into tiles and then further performs the compression on each of these tiles. It is also known to one of ordinary skill in the art that unless the compressed image has been cropped then it will maintain the same number of rectangular regions (tiles) as in the master image. Therefore the judging unit can only use the single value of tiles to judge the quality of the image. It is not directly stated in Skodras, but is known to one of ordinary skill in the art that in order to manage the code-stream and to reconstruct the image the number of tiles must be known and thus would be part of the image compressed code's header. Since the number of tiles is related to the quality of the compressed image then it would have been obvious to one of ordinary skill in the art to use this data as provided in the header to determine a relative quality of the compressed image.

Instant claim 7 provides the additional limitation that predetermined tiles have been subjected to a weighting. These regions of increased quality are referred to as ROI (regions of interest) in JPEG2000 and are given a higher quality than the rest of the compressed image because it is determined to be more important than other regions of the

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image. Based on the fact that the tiles of this region will have a higher quality it would have been obvious to one of ordinary skill in the art to give these tiles greater weight than tiles of lesser quality to provide for a better calculation of the overall image quality. Also, since these tiles have greater quality they will have a larger number of code bits (file size) and thus compressed files with ROI should be compared based on file size instead of the number of tiles since the number of tiles in the master and compressed file will be the same as was addressed per the argument of claim 6.

Instant claim 8 provides the additional limitation to the apparatus of claim 2 that the image compressed code is obtained by encoding the master image data formed by dynamic image data in frame units. The picture quality-judging unit uses the number of frames in the master image and the compressed image, which are acquired from the compressed code as the code information to use for judging the quality of the compressed image relative to the master image. In the Motion JPEG2000 standard each frame is treated as a still image and is compressed accordingly. Since each frame is treated and not dropped then the number of frames in the compressed image data is the same as the number of frames in the master image data. However, if frames were dropped by the decoding unit then the compressed video would have less frames than the original. Less frames in a video corresponds to a lower frame rate and hence a lower quality. Therefore it would have been obvious to one of ordinary skill in the art to acquire the number of frames provided in the header information and to compare that number to that of the original (also provided in the header information as per ISO/IEC 15444-3).

Contact Information

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Bloom whose telephone number is 571-272-9321. The examiner can normally be reached on Monday through Thursday from 7:30 am to 5:00 pm (EST). The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Stucker, can be reached on 571-272-0911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

1/22/2007

Nathan Bloom



JEFFREY STUCKER
SUPERVISORY PATENT EXAMINER